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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,690	11/16/2000	Anne E. Miller	42390P8842	4781

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EXAMINER

UMEZ ERONINI, LYNETTE T

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 10/03/2002

6

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/715,690

Applicant(s)

MILLER, ANNE E.

Examiner

Lynette T. Umez-Eronini

Art Unit

1765

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 17-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 17-30 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other:

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of claims 1-16 in Paper No. 5 is acknowledged.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 6, 7, 11, 12, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman et al. (US 5,954,997) in view of Feller et al. (US 5,700,383).

Kaufman teaches a slurry comprising a mixture (column 5, lines 1-5) of:

a surfactant (column 4, line 54 and column 6, lines 36-41);

an abrasive (column 7, lines 1-5);

an oxidizer (column 4, line 52); and

a corrosion inhibitor (column 4, line 54).

Kaufman differs only in failing to teach a chelating buffer system, **in claims 1 and 11.**

Feller teaches citric acid (chelate) and potassium citrate buffer (same as applicant's chelating buffer system), which has a concentration that is high enough to maintain a pH, but low enough to ensure solubility and keep cost down (column 5, lines 19-20 and 41-44).

It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Kaufman by employing a buffer system as taught by Feller for the purpose of maintaining a slurry having a constant pH.

4. Claims 2, 3, 8, 9, 10; and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman ('997) in view of Feller ('383) as applied to claims 1 and 11 respectively above, and further in view of Grumbine et al. (US 6,083,419).

Kaufman in view of Feller differs in failing to teach cetyltrimethylammonium bromide, **in claims 2, 8, and 10**; cetyltrimethylammonium cations and halogen anions, **in claims 3**; and cetyltrimethylammonium hydroxide **in claim 9, and 14**.

Grumbine teaches a cmp slurry comprising corrosion inhibitors that produce alkyl ammonium ions in aqueous solutions upon dissolution, that include cetyltrimethylammonium hydroxide, tricaprilmethylammonium chloride, and tetramethylammonium hydroxide and mixture thereof, and that range from 0.001 to about 2.0 weight percent (column 4, lines 6-10 and column 5, lines 16-26 and 27-30). Hence, the combination of these inhibitors in an aqueous medium inherently produces

the same compounds as applicant's corrosion inhibitors and surfactants, as claimed in the present invention.

It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Kaufman in view of Feller by using the corrosion inhibitors as taught by Grumbine for the purpose of minimizing surface corrosion on metallic layers.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman ('997) in view of Feller ('383) as applied to claim 1 above, and further in view of Neville et al. (US 5,527,423).

Kaufman in view of Feller differs in failing to teach the chelating buffer system comprises ammonium bicitrate and potassium dissolved in the mixture.

Neville teaches oxidizing components such as citrates, potassium salts, ammonium salts, quaternary ammonium salts, and mixtures thereof may be added to a polishing slurry and the amount of the oxidizing component is sufficient to balance the mechanical and chemical (colloidal stability) polishing components of the slurry (column 5, lines 8-27).

It is the examiner's position since Neville's oxidizing components when mix would inherently produce the same components as applicant's chelating buffer system, then it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Kaufman in view of Neville by combining Neville's oxidizing

components for the purpose of polishing a metal while minimizing surface imperfections (see Neville, column 6, lines 52-56).

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman ('997) in view of Feller ('383) as applied to claim 11 above, and further in view of Kato et al. (US 5,904,159).

Kaufman in view of Feller differs in failing to teach an abrasive comprises silica abrasive having a surface area of  $500 \text{ m}^2/\text{g}$ .

Kato teaches an abrasive comprises silica that has a surface area of  $500 \text{ m}^2/\text{g}$  and an average particle size from 55 to 5 nm, which is in a range that is necessary for obtaining good preservation stability and preventing the polished surfaces from being scarred (column 4, lines 24-36)

It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Kaufman in view of Feller by using the abrasive as taught by Kato for the purpose of preventing the polished surfaces from being scarred.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman ('997) in view of Feller ('383) as applied to claim 11 above, and further in view of Tsai et al (US 5,575,706).

Kaufman in view Feller differs in failing to teach a slurry having a pH of 3.8 and a density of 1.03 g/ml.

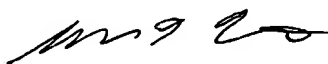
Tsai teaches parameters that affect the polishing rate include slurry particle density and slurry composition (pH) and the adjustment of these parameters permits control of the polishing and planarization processes (column 1, lines 61-66) and suggests that the density and pH ( $-\log[H^+]$ , which is a component of the slurry composition) of the slurry are variable parameters.

It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Kaufman in view Feeler by varying the composition and density of the slurry for the purpose of improving the performance of the polishing process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 703-306-9074. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-972-9310 for regular communications and 703-972-9311 for After Final communications.

ltue  
September 28, 2002

  
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